Denver Airway Study → Montana Advanced Airway Study

Denver study conducted by:

Denver Metro Airway Study Group, consisting of 15 MDs and the Denver Metro EMS Coordinators

Objectives of Denver Study

To determine:

- The success rate of prehospital endotracheal intubation
- The rate of unrecognized tube malposition
- The predictors of tube malposition upon ED arrival

Denver Study Methods

- Length of study period: 5 months
- After intubation attempt, EMS filled out a card (mostly checkboxes) – upon patient delivery to ED, ED MD filled out back side of same card
- Information entered into database and analyzed

Results of Denver Study

- Definition of successful intubation: endotracheal tube balloon below the cords upon ED arrival
- 926 patients had intubation attempt by 1371 providers (~1200 EMT-Ps, 58 EMT-Is and 113 RNs) – this is <1 attempt per provider (average 0.675 per provider)
- For transported patients, 75% successfully intubated, 20% failed and 5% arrived with malpositioned tube
- Only 0.6% utilized another method (Combitube, King, cric)

Results of Denver Study

- Rate of success on cardiac arrest patients was 82%
- Rate of success on non-cardiac arrest patients was 68%
- No attempt was made to track patient outcomes or to try to determine the effect of field intubation attempts upon those outcomes

Discussion From Denver Study

"One solution to improve intubation success rates is greater clinical experience in operating rooms or cadaver laboratories; however, these experiences are difficult to obtain. In light of the introduction of alternative methods of airway management techniques, we believe a better approach is to transition to these techniques and devices that ensure oxygenation and ventilation rather than focus on improving intubation success rates."

Conclusions From Denver Study

- Confirms low intubation success rates and unacceptably high rates of unrecognized malpositioned ETTs reported in previous smaller studies
- Large scale of this study strengthens these previous findings and reinforces the necessity for continued monitoring of EMS providers' practices of endotracheal intubation
- Finding that EMS providers reported only 70% of attempted intubations suggests that self-reported rates of intubation may underestimate the number of intubation attempts and therefore overestimate success rates

What Does This Mean For Montana?

- There are 819 EMTs and ~50 RNs able to intubate patients in Montana in the field – how are they doing?
- A number of local paramedics state they are concerned about skill maintenance because they aren't getting enough intubations
  - In the Missoula area, City and Rural Fire medics intubate and we now have two flight services sharing 911 calls
  - In rural areas, there are services that have a single paramedic working and many of their EMT-Basics intubate under the "endorsement" program

What Does This Mean For Montana?

We are doing a year-long, statewide study to:

- Determine the number of intubations per provider in Montana
- Determine the success rate of those intubations, overall and by provider level
- Determine the confirmatory measures being used
- Determine the rate of usage of alternative devices and the success rate of these devices
- Determine the number of intubation attempts (if any) prior to alternative device use

What Does This Mean For Montana?

Results will be conveyed to numerous groups, including the State Emergency Care Committee, the EMS & Trauma Systems Section of DPHHS, the Board of Medical Examiners, service medical directors and the State Trauma Care Committee

Process

Whenever there is a field attempt at intubation (ETT, King, Combitube):

After delivering patient to ED, person who made attempt fills out one side of the study card (there will be copies in all EDs)

Then gives the card to the provider who cared for the patient

S/he fills out the other side of the card

Card then gets put back into the display where there will be self-addressed, stamped envelopes and someone will mail it to Steve's office

We will enter the data into a program then analyze it and write a report

Process

There are no patient identifiers on the card

The only questions asked about the patient are:

- Less than 13 years old? - Yes or no
- Medical or trauma

There are no provider identifiers on the card – no names or #s

The only questions asked about the provider are:

- Level of provider - EMT-B, EMT-I, EMT-P, RN, Other
- Agency name – we are not going to analyze agency-specific data…that's your job - we're just interested in seeing how urban versus rural services compare

Process

So, no one should feel threatened by this study

We're not analyzing you

We're not analyzing your service

We're analyzing the care all of us deliver to our patients today with the hope of improving it tomorrow

We expect other rural/frontier states to be particularly interested in our findings